

Is a critical mass of women always enough to improve firm performance? The importance of the institutional context

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Abstract

Purpose – This paper aims to present a comprehensive theoretical framework that seeks to explore the impact of cultural, legal and social factors within the external environment on the relationship between women on corporate boards and firm performance. By investigating these boundary conditions, the paper aims to shed light on how these pressures influence the aforementioned relationship.

Design/methodology/approach – To build the sample of companies, the authors selected companies listed on the stock exchanges of countries that represent a diverse range of institutional contexts. These contexts encompass countries with individualistic cultures, collectivist cultures, environments with mandatory gender quotas, environments without gender quotas, contexts with substantial progress toward gender equality and contexts with limited progress in achieving gender equality. To test the hypotheses, the authors used linear regression analysis as a primary analytical approach. Furthermore, they used the propensity score matching technique to address potential issues of reverse causality and unobserved heterogeneity.

Findings – The findings indicate that the positive influence of a critical mass of women on corporate boards on firm performance is contingent upon the institutional context. Specifically, the authors observed that this relationship is strengthened in institutional contexts characterized by an individualistic culture, whereas it is not as pronounced in collectivist cultural contexts. Furthermore, this research provides compelling evidence that the presence of a critical mass of women on boards leads to enhanced firm performance in institutional settings where gender quotas are not binding, as opposed to settings where such quotas are enforced. Lastly, the results demonstrate that the presence of a critical mass of women on boards is associated with improved firm performance in institutional settings characterized by low progress in achieving gender equality. However, the authors did not observe the same effect in institutional contexts that have made significant strides toward gender equality.

Originality/value – This research offers a unique perspective by investigating the relationship between women's presence on corporate boards and firm performance across different institutional contexts. In this investigation, the authors recognize that gender diversity on corporate boards is not a one-size-fits-all solution and that its effects can be shaped by the unique institutional contexts in which companies operate.

Keywords Women on boards, Institutional context, Firm performance, Board gender quotas

Paper type Research paper

1. Introduction

The presence of women in top corporate positions continues to be a highly debated and relevant topic (Martinez-Jimenez *et al.*, 2020; Gharbi and Othmani, 2022). This is evidenced by the increasing number of countries implementing “binding gender quotas” and the growing demand from institutional investors for companies to adopt gender equality practices and policies (Terjesen *et al.*, 2015; Iannotta *et al.*, 2016; Byron and Post, 2016; Guedes *et al.*, 2023; Perrault, 2015). Beyond moral or ethical considerations surrounding gender diversity at the top of companies (Terjesen and Sealy, 2016), the topic continues to attract researchers who are interested in examining the potential benefits of including women on corporate boards.

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A compelling argument supporting the inclusion of women in top corporate positions is the diverse perspectives they bring, which helps overcome the groupthink often observed inside homogeneously structured boards, often referred to as “old-boys clubs” (Menicucci and Paolucci, 2022; Campbell and Minguez-Vera, 2008; Adams and Ferreira, 2009; Hoobler *et al.*, 2018). Furthermore, scholars have emphasized that the transformative power of women on boards is contingent upon reaching a certain threshold in terms of their representation. It is argued that once this threshold is surpassed, women become a significant influence in shaping board dynamics and decision-making processes (Konrad *et al.*, 2008; Joecks *et al.*, 2013).

However, the existing body of research has primarily focused on examining the impact of a critical mass of women on board on firm performance, neglecting to thoroughly investigate the potential role of the institutional setting in shaping this relationship (Adams, 2016; Terjesen *et al.*, 2016; Zhang, 2020; Leyva-Townsend *et al.*, 2021). This oversight is unfortunate, as the institutional context frequently plays a pivotal role in influencing the behavior and interactions of women at the highest levels of corporate leadership (Campopiano *et al.*, 2022).

This paper presents a comprehensive theoretical framework that draws upon insights from the social sciences, aiming to explore the impact of cultural, legal and social pressures within the surrounding environment as boundary conditions for the relationship between women on corporate boards and firm performance. In our study, we define social context as the collection of sociocultural forces that shape women’s experiences in these roles (Abadi *et al.*, 2022). Our framework proposes that the relationship between women on boards and firm performance varies depending on the presence of contextual pressures that either enhance or diminish women’s ability to freely express their opinions (Trzebiatowski *et al.*, 2023). We put forth three key ideas to support this argument. First, we argue that in individualistic countries, the presence of a critical mass of women on boards positively influences firm performance. We contend that in such institutional settings, women feel confident and empowered to express their ideas and opinions, leading to improved outcomes. Second, we assert that in countries without binding gender quotas in place, a critical mass of women on boards also positively impacts firm performance. We suggest that in these institutional settings, women perceive their board member positions as rightfully earned, resulting in a sense of entitlement and a stronger contribution to overall company success. Lastly, we propose that in countries characterized by high gender equality progress, a critical mass of women on boards similarly enhances firm performance. In these institutional settings, women perceive their presence at the top of a company as the norm, creating a conducive environment for collaboration and effective decision-making. By incorporating these insights, our theoretical framework sheds light on the complex interplay between contextual pressures, women on boards and firm performance, providing a more nuanced understanding of the mechanisms at play in different institutional contexts.

The primary objective of this manuscript is to shed new light on the boundary conditions that either strengthen or weaken the relationship between the presence of women in top corporate positions and organizational performance. To address this research gap, we conducted a thorough analysis focusing on publicly traded companies situated within institutional contexts characterized by distinct features. Our contribution to the existing literature on women on boards lies in testing the boundaries of critical mass theory (Darmadi, 2013; Arena *et al.*, 2015; Noguera, 2020; Gharbi and Othmani, 2022). This theory posits that a minimum number of women on the board is necessary for women to have the ability to influence decision-making processes within the boardroom (Joecks *et al.*, 2013; Nguyen *et al.*, 2020) and, consequently, impact firm performance. However, our results provide valuable insights by demonstrating that the presence of a critical mass of women on boards is a necessary but not sufficient condition. Our manuscript answers to the call of (Hazaea *et al.*, 2023) to take into account the context-related specificities when studying the link between board gender diversity and firm financial performance.

Our research findings highlight the significance of the contextual environment in which women in top positions find themselves. We contribute to the literature by revealing that for women at the corporate apex to contribute effectively to company results, they must be situated within a context that fosters a sense of entitlement and empowerment, enabling them to confidently express their opinions (Trzebiatowski *et al.*, 2023). In summary, our manuscript offers fresh insights into the relationship between female representation at the top and organizational performance, emphasizing the importance of both critical mass and the enabling context. By challenging critical mass theory, we provide a more comprehensive understanding of the conditions necessary for women in leadership positions to make a meaningful impact on firm outcomes (Sidhu *et al.*, 2021).

The remaining sections of this paper are organized as follows. In Section 2, we provide a comprehensive overview of the theoretical background and develop the hypotheses based on the existing literature. Section 3 outlines the data sources, constructs used and the methodology employed in our study. Moving forward, Section 4 presents the empirical findings obtained from our analysis. In Section 5, we engage in a detailed discussion of the results, including their practical implications, limitations, and recommendations for future research. Finally, we draw conclusions and provide a concise summary of our key findings.

2. Theory and hypotheses development

The question of whether the presence of women in corporate governance bodies improves board decision-making processes and ultimately enhances firm performance has garnered significant attention from both scholars and practitioners. However, the existence of a causal link in this regard remains a subject of debate. On one hand, several studies have demonstrated a positive causal relationship (Rose, 2007; Lückerath-Rovers, 2013; Isidro and Sobral, 2015). On the other hand, there are scholars who have highlighted a negative causal link (Mínguez-Vera and Martín, 2011; Darmadi, 2013). Furthermore, some studies have found no substantial causal relationship between women in top positions and organizational performance (Chapple and Humphrey, 2014). The multitude of findings in this area has led to confusion within the academic community about the true impact of women in the workplace. One key distinction among the existing studies is their focus on examining this link within specific institutional contexts (Green and Homroy, 2018). This approach has inevitably contributed to the complexity surrounding the understanding of the role women play in the world of work. As institutional scholars theorize, the context significantly influences human behavior and the organizations themselves (Jeong and Harrison, 2017). Considering the potential influence of the institutional context on the ability of women in top positions to voice their opinions during board meetings, it becomes crucial to re-evaluate the relationship between the presence of women at the corporate apex and firm performance, while taking into account the socio-cultural context in which these women are situated.

Despite progress in recent years, women continue to be underrepresented within the boardrooms of numerous companies worldwide (Hillman, 2015; Kräft, 2022). Although women possess a range of qualities that can enhance decision-making processes at the corporate apex and contribute to firm performance, it has been argued that their minority status hampers their ability to effectively voice their perspectives during board meetings (Davies-Netzeley, 1998; Elstad and Ladegard, 2012; De Masi *et al.*, 2021). However, scholars specializing in group dynamics posit that when the size of a minority group surpasses a certain critical threshold, the influence and power of that minority group grow, allowing them to exert their influence over the decisions of the entire group (Etzkowitz *et al.*, 1994; Bear *et al.*, 2010; Lefley and Janeček, 2023). This fundamental premise has been invoked by numerous researchers to support the idea that achieving a critical mass of women at the top enables them to actively participate in boardroom dynamics, leading to improved firm performance and other organizational outcomes (Gong *et al.*, 2021).

Nevertheless, it is crucial to acknowledge that women's behavior is a complex phenomenon influenced by a multitude of social and cultural forces. These factors play a significant role in shaping how women navigate and interact within the corporate setting (Glass and Cook, 2020; Trzebiatowski *et al.*, 2023).

From a cultural perspective (Hofstede, 2011), two contrasting realities potentially shape women's ability to exert influence on boardroom decisions. First, there are institutional contexts characterized by an individualist culture. In such contexts, the significance of the individual surpasses that of the group, and it is crucial for individuals to act independently and express their own opinions (Leonard and Smith, 2021). Individualistic cultures are characterized by a value system that emphasizes the primacy of personal goals over collective goals (Schwartz, 1990; Sosik and Jung, 2002). Consequently, this cultural inclination influences not only individuals' thinking patterns but also their behavior within a group setting (Dutta *et al.*, 2022). Conversely, there are institutional contexts characterized by a collectivist culture. In these contexts, the emphasis is placed on group harmony and the prioritization of collective goals over personal goals (Marcus and Le, 2013). Here, individuals tend to prioritize the needs and objectives of the group, working toward maintaining harmonious relationships within the collective. These cultural dimensions play a crucial role in shaping individuals' behavior and attitudes toward group dynamics (Wiersema and Mors, 2023), including their ability to influence boardroom decisions.

How do these cultural pressures influence the behavior of women at the corporate apex? One might assume that in a collectivist institutional environment, it would be easier for women to feel included and comfortable expressing their opinions (Dutta *et al.*, 2022). However, research has shown that in an individualistic culture, individuals tend to persist in maintaining their viewpoints despite opposition and pressure to conform to group norms (Goncalo and Staw, 2006). Applying this theoretical premise to the context of corporate boards, it can be argued that women directors working in companies situated within individualistic institutional settings may have a stronger ability to express their opinions during board meetings and, consequently, wield influence over decisions at the corporate apex (Dutta *et al.*, 2022).

Conversely, women directors working in companies embedded in collectivist institutional settings may experience diminished ability to express their opinions during board meetings, thus potentially having less impact on top-level decisions. Although the presence of a critical mass of women can enhance their perceived legitimacy to express their thoughts and influence strategic decisions, this critical mass may not be sufficient if the minority group of women operates within a collectivist institutional setting. Based on this reasoning, we formulate the following hypotheses to guide our investigation into the influence of cultural pressures on women's behavior and their ability to influence decision-making at the corporate apex:

H1a. In institutional contexts characterized by an individualistic culture, the presence of a critical mass of women on board leads to better firm performance.

H1b. In institutional contexts characterized by a collectivist culture, the presence of a critical mass of women on board does not lead to better firm performance.

From a legal perspective, there are two contrasting realities that potentially shape women's ability to influence boardroom decisions. First, there are institutional contexts characterized by the presence of binding gender quotas aimed at promoting more balanced boardrooms. Many countries have adopted or are in the process of adopting regulations requiring firms to address the gender imbalance by ensuring a minimum representation of women in their workforce (Adams and Ferreira, 2009; Rose, 2007). On the other hand, there are institutional contexts where a binding gender quota is not yet in force. In these contexts, the composition of boards remains predominantly based on voluntary initiatives and industry norms. The question arises:

Q1. How do these legal pressures influence women's behavior at the corporate apex?

While the introduction of a binding gender quota undoubtedly increases the number of women in top positions within companies (Hughes *et al.*, 2017; Mensi-Klarbach and Seierstad, 2020), it does not necessarily guarantee women's full empowerment and meaningful contribution to corporate performance. Despite the good intentions behind gender quotas, they can inadvertently lead to women being perceived as "quota-filling board members" rather than valued participants capable of making important decisions. This perception can potentially limit women's ability to express their opinions during board meetings and diminish their impact on decision-making processes (Labelle *et al.*, 2015).

The presence of a binding gender quota can inadvertently reinforce the biased notion that women are not naturally suited for top positions, further undermining the legitimacy and perceived qualifications of women in such roles (Krook and Norris, 2014). Women may perceive themselves as being unqualified for their positions and believe they have been placed there solely to fulfill a requirement, rather than based on merit (Zajji *et al.*, 2021). This situation can lead to tokenism and potentially erode women's self-confidence. In contrast, women in institutional contexts where a binding gender quota is not enforced should not perceive their presence as merely a legal obligation. Instead, they should recognize that they have been chosen based on their merits and qualifications, instilling a stronger sense of deserving their position. This perception is likely to have significant implications for the behavior of women serving on boards of directors and, ultimately, on corporate performance. Based on this reasoning, we formulate the following hypotheses to guide our exploration of the impact of binding gender quotas and their absence on women's behavior and its influence on board dynamics and corporate performance:

- H2a.* In institutional settings without binding gender quotas, the presence of a critical mass of women on board leads to better firm performance.
- H2b.* In institutional settings with binding gender quotas, the presence of a critical mass of women on board does not lead to better firm performance.

As mentioned earlier, women's behavior is a complex phenomenon influenced by a multitude of cultural, legal, and societal forces (Jayachandran, 2021). Another significant factor that can shape the behavior of women in top positions is the level of "gender equality" within the broader societal context (Cortis *et al.*, 2022). The level of gender equality in a country reflects the extent to which women enjoy equal rights, opportunities and freedom from discrimination and violence, including workplace discrimination (UN, sdgs.un.org). In countries with greater gender parity, women have equal opportunities for education and managerial careers, like their male counterparts. This increased level of equality enhances their legitimacy in board positions and empowers them to express their values and diverse perspectives (Subašić *et al.*, 2018). Working in a country where gender equality is well-established, women perceive being at the top of a company as normal. This perception facilitates their ability to contribute meaningfully to board meetings. Women in such contexts where "having women in top positions is becoming the norm" feel more empowered and are better able to voice their opinions, thus influencing decision-making at the corporate apex.

Conversely, working in a context where it is uncommon to see many women in top positions due to low progress in gender equality has significant repercussions on women's sense of legitimacy. In countries with low gender parity, women are more likely to face workplace harassment and violence throughout their careers (McDonald, 2012) and may encounter increased scrutiny and prejudice. In such environments, women who have reached top positions have often had to develop coping strategies to navigate the challenges. They may adopt behaviors and values similar to those traditionally associated with men (Adams and Funk, 2012). However, despite breaking the glass ceiling, being in an institutional setting characterized by low progress in gender equality can still pose barriers to effective leadership. It can impede women's ability to influence boardroom decision-making and ultimately impact firm performance.

Based on this reasoning, we formulate the following hypotheses:

- H3a.* In institutional settings characterized by high gender equality progress, the presence of a critical mass of women on board leads to better firm performance.
- H3b.* In institutional settings characterized by low gender equality progress, the presence of a critical mass of women on board does not lead to better firm performance.

3. Research methodology

3.1 Sample and sub-samples

We compiled a sample of publicly traded companies operating in diverse institutional contexts, including the USA, the UK, Spain, Germany, France and Switzerland. This sample was subsequently divided into several sub-samples based on specific criteria. The sub-samples included companies from different institutional settings: individualistic culture (“Individualism”), collectivist culture (“Collectivism”), binding gender quota for women on boards (“Binding Gender Quota Yes”), no binding gender quota (“Binding Gender Quota No”), significant progress in achieving SDG 5 on gender equality (“High Progress Gender Equality”) and limited progress in achieving SDG 5 on gender equality (“Low Progress Gender Equality”). For the category of individualistic culture, we focused on companies from the USA and the UK; for the collectivist culture category, we focused on companies from Germany, France, Spain and Switzerland. We gathered data from the S&P100 and FTSE100 stock market indices for the USA and the UK, respectively. For Germany, France, Spain and Switzerland, we used data from the components of the IBEX35, DAX30, CAC40 and SMI stock market indexes. Companies with a binding gender quota were specifically chosen from the stock exchanges in Germany and France. Germany introduced its quota in 2015, and France implemented it in 2011. The assessment of countries’ progress in achieving SDG 5 (gender equality) came from the Sustainable Development Report, which provides independent assessments of UN member states’ progress toward the SDGs. We focused on publicly traded companies to ensure reliable data, covering the period from 2010 to 2019, excluding the financial crisis of 2008–2009 and the COVID-19 pandemic. The sample comprised 325 firm-year observations, providing a robust dataset. Comprehensive company-specific data for analysis was obtained from Bloomberg.

3.2 Measurement of variables

Dependent variable. The dependent variable of this study is firm performance. To evaluate firm performance, we use return on assets (ROA), an accounting metric widely recognized as a measure of profitability and efficiency (Khanna *et al.*, 2014). Additionally, to ensure the robustness of our results, we conducted additional analyses using return on equity (ROE) as an alternative measure of firm performance.

Independent variable: The independent variable in this study is the presence of a critical mass of female directors. Previous research on influence and conformity suggests that the number three holds significance in group dynamics (Torchia *et al.*, 2011). Specifically, within the board context, (Konrad *et al.*, 2008) found that female directors become more assertive, influential, and at ease when the number of women on the board reaches three or more members. Drawing from these theoretical arguments, we establish the threshold of three female directors as the critical mass. For coding purposes, the variable is assigned a value of “1” when the number of female directors is equal to or exceeds three, and “0” otherwise.

Control variables. This study incorporates a comprehensive set of control variables to address various alternative explanations that may impact firm performance. First, we account for firm size as it can influence performance. To control for firm size, we include the

natural logarithm of total assets as a control variable. Second, financial leverage is considered as it can affect performance. To address this, we include the debt-to-equity ratio as a control variable. Third, the growth opportunities of a firm may impact its performance. Therefore, we include the market-to-book ratio as a control variable to capture firm growth opportunities. Considering the influence of leadership structure, we include a control variable for CEO duality. This variable is coded as “1” when the CEO also serves as the chairperson and “0” otherwise. Furthermore, we account for board characteristics that could influence performance. We include board size, which represents the total number of directors on the board. Additionally, we consider board independence, measured as the percentage of directors classified as independent in a given year. To capture time-specific effects, we include year dummies to control for unobserved heterogeneities such as macroeconomic shocks, media attention, and policy debates related to female representation on boards. Industry dummies are also included in all models to account for time-invariant unobservable factors associated with specific industries that could impact the number of female board members. To address the potential influence of ownership structure, we develop dummy variables based on the top owner of the firm, distinguishing between various categories such as banks, corporations, family offices, foundations, governments, holding companies, individuals, investment advisors, private equity, trusts and others. This ensures that our results are not confounded by ownership-related factors. In all models, we lag the independent and control variables by one year to minimize endogeneity issues.

3.3 Empirical methodology

To test our hypotheses, we conducted panel data firm-level analyses using fixed effects. As mentioned earlier, we explored the impact of a critical mass of women on board on business performance in various institutional settings. To do so, we used linear regression models on different sub-samples. First, we ran the linear regression model on the entire sample, encompassing all companies. Second, we ran the model exclusively on the sub-sample of companies operating within an institutional context characterized by an individualistic culture. Third, we ran the model exclusively on the sub-sample of companies operating within a context characterized by a collectivist culture. Fourth, we ran the model exclusively on the sub-sample of companies operating within an institutional setting with a binding quota for women on boards. Fifth, we ran the model exclusively on the sub-sample of companies operating within an institutional setting without a binding quota for women on boards. Sixth, we ran the model exclusively on the sub-sample of companies operating within an institutional context characterized by a positive scenario in terms of achieving SDG 5 on gender equality. Lastly, we ran the model exclusively on the sub-sample of companies operating within an institutional context characterized by a relatively less favorable scenario in terms of achieving SDG 5 on gender equality.

4. Results

The descriptive statistics for the entire sample and each sub-sample are presented in [Table 1](#) through [Table 7](#). The correlation matrix for the entire sample and each sub-sample can be found in [Table 8](#) to [Table 14](#). Upon reviewing the descriptive statistics tables, it is evident that the average presence of a critical mass of women on board varies across different contexts. Specifically, in contexts characterized by a collectivist culture, the average presence of a critical mass of women on board is higher (mean = 0.585) compared to contexts characterized by an individualistic culture (mean = 0.48). Similarly, in countries with a binding gender quota in place, the average presence of a critical mass of women on board is higher (mean = 0.871) compared to countries without such a quota (mean = 0.452). Moreover, in countries with a good scenario in terms of SDG 5 achievement, the average presence of a

Table 1 Descriptive statistics (all)

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
ROA	6.46	12.823	-59.76	236.78
Critical mass WOB	0.52	0.5	0	1
CEO duality	0.326	0.469	0	1
Board size	12.063	3.224	3	23
Board independence	71.368	18.707	0	100
Firm size	24.224	1.887	17.467	28.622
Firm leverage	157.66	900.078	-109.391	38,429.412
Firm growth opportunities	6.294	34.836	0.005	895.232

Source: Elaboration of the authors

Table 2 Descriptive statistics (individualism)

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
ROA	7.873	15.7	-59.76	236.78
Critical mass WOB	0.48	0.5	0	1
CEO duality	0.342	0.474	0	1
Board size	11.238	2.368	3	21
Board independence	76.187	14.351	27.27	100
Firm size	24.23	1.937	17.467	28.622
Firm leverage	180.65	1097.477	-109.391	38,429.412
Firm growth opportunities	8.691	44.34	0.048	895.232

Source: Elaboration of the authors

Table 3 Descriptive statistics (collectivism)

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
ROA	4.185	4.909	-30.86	30.76
Critical mass WOB	0.585	0.493	0	1
CEO duality	0.299	0.458	0	1
Board size	13.394	3.907	4	23
Board independence	61.908	22.315	0	100
Firm size	24.214	1.803	18.473	28.403
Firm leverage	122.34	450.41	0	15,142.254
Firm growth opportunities	2.53	2.986	0.005	69.667

Source: Elaboration of the authors

Table 4 Descriptive statistics (binding gender quotas yes)

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
ROA	4.154	4.096	-10.28	22.24
Critical mass WOB	0.871	0.336	0	1
CEO duality	0.413	0.493	0	1
Board size	14.351	3.506	5	23
Board independence	62.878	21.338	18.75	100
Firm size	24.526	1.569	20.873	28.403
Firm leverage	80.686	85.958	0	1105.439
Firm growth opportunities	2.319	1.957	0.19	17.084

Source: Elaboration of the authors

Table 5 Descriptive statistics (binding gender quotas no)

Variable	Mean	SD	Min	Max
ROA	6.891	13.817	-59.76	236.78
Critical mass WOB	0.452	0.498	0	1
CEO duality	0.309	0.462	0	1
Board size	11.627	2.975	3	23
Board independence	72.947	17.738	0	100
Firm size	24.167	1.936	17.467	28.622
Firm leverage	172.72	982.777	-109.391	38,429.412
Firm growth opportunities	7.069	38.02	0.005	895.232

Source: Elaboration of the authors

Table 6 Descriptive statistics (high progress gender equality)

Variable	Mean	SD	Min	Max
ROA	3.989	4.074	-10.28	22.24
Critical mass WOB	0.824	0.381	0	1
CEO duality	0.576	0.495	0	1
Board size	13.9	2.92	8	23
Board independence	57.603	17.485	18.18	100
Firm size	24.426	1.611	20.873	28.403
Firm leverage	77.306	80.944	0.935	872.487
Firm growth opportunities	2.22	2.045	0.19	17.084

Source: Elaboration of the authors

Table 7 Descriptive statistics (low progress gender equality)

Variable	Mean	SD	Min	Max
ROA	6.811	13.582	-59.76	236.78
Critical mass WOB	0.476	0.5	0	1
CEO duality	0.29	0.454	0	1
Board size	11.799	3.18	3	23
Board independence	73.509	17.969	0	100
Firm size	24.195	1.921	17.467	28.622
Firm leverage	169.35	962.276	-109.391	38,429.412
Firm growth opportunities	6.887	37.24	0.005	895.232

Source: Elaboration of the authors

Table 8 Correlations matrix (all)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ROA	1.000							
(2) Critical mass WOB	-0.022	1.000						
(3) CEO duality	-0.052*	0.126*	1.000					
(4) Board size	-0.161*	0.391*	0.123*	1.000				
(5) Board independence	0.044*	0.142*	0.171*	-0.059*	1.000			
(6) Firm size	-0.220*	0.268*	0.207*	0.461*	0.322*	1.000		
(7) Firm leverage	0.004	0.010	0.035	-0.008	0.033	0.007	1.000	
(8) Firm growth opp.	0.552*	0.010	0.019	-0.073*	0.037*	-0.119*	0.564*	1.000

Note: * $p < 0.05$

Source: Elaboration of the authors

Table 9 Correlations matrix (individualism)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ROA	1.000							
(2) Critical mass WOB	0.007	1.000						
(3) CEO duality	-0.060*	0.109*	1.000					
(4) Board size	-0.145*	0.363*	0.213*	1.000				
(5) Board independence	-0.035	0.303*	0.538*	0.327*	1.000			
(6) Firm size	-0.229*	0.227*	0.321*	0.498*	0.475*	1.000		
(7) Firm leverage	0.009	0.021	0.044	-0.010	0.038	0.004	1.000	
(8) Firm growth opp.	0.561*	0.028	0.020	-0.063*	0.011	-0.133*	0.569*	1.000

Note: * $p < 0.05$

Source: Elaboration of the authors

Table 10 Correlations matrix (collectivism)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ROA	1.000							
(2) Critical mass WOB	-0.095*	1.000						
(3) CEO duality	-0.081*	0.169*	1.000					
(4) Board size	-0.201*	0.423*	0.087*	1.000				
(5) Board independence	0.102*	0.091*	-0.240*	-0.147*	1.000			
(6) Firm size	-0.294*	0.348*	-0.003	0.517*	0.202*	1.000		
(7) Firm leverage	-0.377*	-0.042	-0.035	0.175*	-0.112*	0.018	1.000	
(8) Firm growth opp.	0.299*	-0.103*	-0.016	-0.199*	0.003	-0.385*	0.134*	1.000

Note: * $p < 0.05$

Source: Elaboration of the authors

Table 11 Correlations matrix (binding gender quotas yes)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ROA	1.000							
(2) Critical mass WOB	-0.065	1.000						
(3) CEO duality	-0.103*	0.091*	1.000					
(4) Board size	-0.247*	0.418*	0.007	1.000				
(5) Board independence	-0.014	-0.054	-0.299*	-0.167*	1.000			
(6) Firm size	-0.486*	0.288*	-0.057	0.483*	0.047	1.000		
(7) Firm leverage	-0.388*	0.088	-0.052	0.388*	-0.025	0.452*	1.000	
(8) Firm growth opp.	0.538*	-0.067	-0.112*	-0.198*	-0.015	-0.403*	-0.130*	1.000

Note: * $p < 0.05$

Source: Elaboration of the authors

Table 12 Correlations matrix (binding gender quotas no)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ROA	1.000							
(2) Critical mass WOB	0.006	1.000						
(3) CEO duality	-0.044*	0.110*	1.000					
(4) Board size	-0.146*	0.318*	0.126*	1.000				
(5) Board independence	0.033	0.264*	0.314*	0.055*	1.000			
(6) Firm size	-0.208*	0.257*	0.247*	0.464*	0.402*	1.000		
(7) Firm leverage	0.004	0.022	0.043*	-0.004	0.029	0.004	1.000	
(8) Firm growth opp.	0.554*	0.029	0.027	-0.066*	0.031	-0.120*	0.564*	1.000

Note: * $p < 0.05$

Source: Elaboration of the authors

Table 13 Correlations matrix (high progress gender equality)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ROA	1.000							
(2) Critical mass WOB	-0.093	1.000						
(3) CEO duality	-0.090	0.101*	1.000					
(4) Board size	-0.299*	0.281*	0.206*	1.000				
(5) Board independence	-0.088	-0.061	-0.124*	-0.445*	1.000			
(6) Firm size	-0.468*	0.256*	0.023	0.477*	0.080	1.000		
(7) Firm leverage	-0.329*	0.089	-0.009	0.429*	-0.031	0.508*	1.000	
(8) Firm growth opp.	0.579*	-0.038	-0.127*	-0.239*	-0.102*	-0.366*	-0.092	1.000

Note: * $p < 0.05$

Source: Elaboration of the authors

Table 14 Correlations matrix (low progress gender equality)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ROA	1.000							
(2) Critical mass WOB	-0.002	1.000						
(3) CEO duality	-0.036	0.081*	1.000					
(4) Board size	-0.147*	0.367*	0.065*	1.000				
(5) Board independence	0.027	0.261*	0.302*	0.088*	1.000			
(6) Firm size	-0.213*	0.268*	0.228*	0.462*	0.385*	1.000		
(7) Firm leverage	0.003	0.018	0.046*	-0.006	0.026	0.003	1.000	
(8) Firm growth opp.	0.553*	0.022	0.033	-0.067*	0.027	-0.121*	0.564*	1.000

Note: * $p < 0.05$

Source: Elaboration of the authors

critical mass of women on board is higher (mean = 0.824) compared to countries with a worse scenario (mean = 0.476).

Upon examining the correlation matrix tables, several observations can be made. When considering the entire sample, the correlation between a critical mass of women on board and firm performance is not significant. Similarly, when focusing on contexts characterized by an individualistic culture, the correlation coefficient remains nonsignificant. However, in contrast to our expectations, when analyzing contexts characterized by a collectivist culture, the correlation coefficient is negative and significant. This unexpected finding warrants further investigation. When exploring the sub-sample of companies operating in an institutional setting with a binding quota for women on boards, the correlation coefficient is not significant. Likewise, in the sub-sample of companies operating in an institutional setting without a binding quota, the correlation coefficient also lacks significance. These results suggest that the presence of a binding gender quota does not influence the relationship between a critical mass of women on board and firm performance. Moreover, considering the sub-sample of companies embedded in an institutional context characterized by a positive scenario in terms of SDG 5 achievement, the correlation coefficient is not significant. Similarly, in the sub-sample of companies embedded in an institutional context characterized by a less favorable scenario in terms of SDG 5 achievement, the correlation coefficient remains non-significant. Thus, these preliminary findings indicate that the level of progress in terms of SDG 5 achievement does not play a significant role in the relationship between a critical mass of women on board and firm performance.

The results of the linear regression analysis, using ROA as a measure of firm performance, are presented in [Table 15](#). Additionally, the results using ROE as a measure are reported in [Table 16](#). Examining [Table 15](#), we observe that the effect of a critical mass of women on board on firm performance is positive and significant in the sub-sample of companies

Table 15 Linear regression – ROA as DV

	All (1)	Individualism (2)	Collectivism (3)	Binding gender quotas Yes (4)	Binding gender quotas No (5)	High progress gender equality (6)	Low progress gender equality (7)
CEO duality	-1.346** (0.414)	-1.708* (0.697)	-0.723* (0.316)	-0.172 (0.369)	-1.598** (0.514)	0.511 (0.392)	-1.610** (0.502)
Board size	-0.274** (0.079)	-0.265+ (0.141)	-0.131* (0.051)	0.010 (0.061)	-0.292** (0.101)	-0.084 (0.080)	-0.262** (0.091)
Board independence	0.016 (0.012)	0.006 (0.027)	0.025** (0.008)	0.018+ (0.009)	0.012 (0.016)	0.034* (0.014)	0.006 (0.015)
Firm size	0.003 (0.147)	-0.048 (0.202)	-0.116 (0.142)	-0.302 (0.219)	0.017 (0.168)	-0.419+ (0.251)	0.038 (0.162)
Firm leverage	-0.007** (0.000)	-0.007** (0.000)	-0.013** (0.002)	-0.011** (0.004)	-0.007** (0.000)	-0.006* (0.003)	-0.007** (0.000)
Firm growth opp.	0.189** (0.007)	0.186** (0.009)	0.299** (0.053)	0.361** (0.111)	0.187** (0.008)	0.228+ (0.118)	0.187** (0.008)
Critical mass WOB	0.780+ (0.439)	1.406* (0.637)	-0.076 (0.325)	0.348 (0.525)	1.114* (0.511)	0.439 (0.497)	1.157* (0.501)
Constant	6.340 (4.230)	2.361 (5.500)	10.986** (3.287)	12.999** (4.672)	1.863 (5.506)	15.785** (5.341)	2.955 (5.430)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ownership dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.308	0.307	0.522	0.615	0.310	0.654	0.311

Notes: Standard errors are in parentheses; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$

Source: Elaboration of the authors

Table 16 Linear regression – ROE as DV

	All (1)	Individualism (2)	Collectivism (3)	Binding gender quotas Yes (4)	Binding gender quotas No (5)	High progress gender equality (6)	Low progress gender equality (7)
CEO duality	-4.341* (1.820)	-4.893 (3.122)	-2.687* (1.144)	-1.184 (1.360)	-5.542* (2.281)	0.303 (1.371)	-5.114* (2.227)
Board size	-0.515 (0.345)	-0.360 (0.632)	-0.317+ (0.186)	-0.159 (0.226)	-0.356 (0.448)	-0.416 (0.281)	-0.397 (0.404)
Board independence	0.003 (0.054)	-0.061 (0.121)	0.005 (0.028)	0.015 (0.034)	-0.018 (0.072)	0.061 (0.047)	-0.046 (0.067)
Firm size	0.370 (0.648)	-0.086 (0.904)	1.050* (0.512)	0.581 (0.808)	0.336 (0.743)	0.530 (0.880)	0.513 (0.720)
Firm leverage	-0.044** (0.002)	-0.045** (0.002)	-0.031** (0.006)	-0.018 (0.013)	-0.045** (0.002)	0.010 (0.010)	-0.045** (0.002)
Firm growth opp.	2.170** (0.037)	2.165** (0.045)	0.426* (0.193)	1.441** (0.407)	2.164** (0.040)	0.625 (0.414)	2.165** (0.039)
Critical mass WOB	3.701+ (1.929)	5.756* (2.853)	-0.612 (1.180)	-0.410 (1.938)	4.837* (2.266)	-0.467 (1.739)	5.042* (2.221)
Constant	8.122 (18.869)	-11.922 (24.835)	-3.523 (11.907)	0.406 (17.232)	-2.549 (25.420)	-2.070 (18.698)	0.081 (25.066)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ownership dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.601	0.612	0.208	0.251	0.605	0.297	0.604

Notes: Standard errors are in parentheses; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$

Source: Elaboration of the authors

nested in an institutional context characterized by an individualistic culture ($b = 1.406$, p -value < 0.05). However, in the sub-sample of companies nested in an institutional context characterized by a collectivist culture, the effect is not significant ($b = -0.076$, p -value > 0.05). Similar findings are found in Table 16. These results indicate that the presence of a critical mass of women on board leads to improved firm performance in institutional settings characterized by an individualistic culture, but not in settings characterized by a collectivist culture. Hence, *H1a* and *H1b* are supported. Furthermore, when we examine Table 15, we find that the effect of a critical mass of women on board on firm performance is positive and significant in the sub-sample of companies without binding gender quotas ($b = 1.114$, p -value < 0.05). However, in the sub-sample of companies with binding gender quotas, the effect is not significant ($b = 0.348$, p -value > 0.05). Similar findings are observed in Table 16. These results indicate that the presence of a critical mass of women on board enhances firm performance in institutional settings without binding gender quotas, while the effect is not significant in settings with binding gender quotas. Therefore, *H2a* and *H2b* are confirmed. Lastly, examining Table 15, we find that the effect of a critical mass of women on board on firm performance is positive and significant in the sub-sample of companies in institutional settings characterized by low gender equality progress ($b = 1.157$, p -value < 0.05). However, in the sub-sample of companies in settings characterized by high gender equality progress, the effect is not significant ($b = 0.439$, p -value > 0.05). Similar results are observed in Table 16. These findings suggest that the presence of a critical mass of women on board improves firm performance in institutional settings with low gender equality progress, but not in settings with high gender equality progress. Hence, *H3a* and *H3b* are not supported. This counterintuitive result will be discussed in-depth in the Discussions section.

4.1 Robustness checks

We used quasi-experimental methods to address concerns of reverse causality and unobserved heterogeneity. To obtain a more reliable estimate of the causal effect of a critical mass of women on board on firm performance, we used propensity score matching, a matching technique. This technique assumes that treatment assignment is random after accounting for all observed characteristics (Morgan and Winship, 2015). If this assumption holds, the estimated treatment effect is consistent. The results of the propensity score matching analysis, using ROA as a measure of firm performance, are presented in Table 17. Additionally, the results using ROE as a measure are reported in Table 18. Table 17 demonstrates that the effect of a critical mass of women on firm performance is positive and significant in the sub-sample of companies nested in an institutional context characterized by an individualistic culture ($b = 0.918$, p -value < 0.05), in the sub-sample of companies without binding gender quotas ($b = 0.813$, p -value < 0.05) and in the sub-sample of companies in institutional settings with low gender equality progress ($b = 0.710$, p -value < 0.05). Conversely, the effect of a critical mass of women on firm performance is not significant in the sub-sample of companies nested in an institutional context characterized by a collectivist culture, in the sub-sample of companies with binding gender

Table 17 Propensity score matching – ROA as DV

	All (1)	Individualism (2)	Collectivism (3)	Binding gender quotas Yes (4)	Binding gender quotas No (5)	High progress gender equality (6)	Low progress gender equality (7)
Critical mass WOB	0.452 (0.323)	0.918* (0.447)	-0.024 (0.298)	-0.443 (0.572)	0.813* (0.367)	-0.205 (0.376)	0.710* (0.362)
Controls	YES	YES	YES	YES	YES	YES	YES

Notes: Standard errors are in parentheses; * $p < 0.01$, * $p < 0.05$, + $p < 0.1$

Source: Elaboration of the authors

Table 18 Propensity score matching – ROE as DV

	<i>All</i> (1)	<i>Individualism</i> (2)	<i>Collectivism</i> (3)	<i>Binding quota</i> Yes (4)	<i>Binding quota</i> No (5)	<i>High progress</i> <i>gender equality</i> (6)	<i>Low progress</i> <i>gender equality</i> (7)
Critical mass WOB	4.144** (1.580)	5.961** (2.307)	-0.135 (0.931)	-1.308 (1.394)	6.044** (1.912)	-2.491 (1.627)	5.479** (1.836)
Controls	YES	YES	YES	YES	YES	YES	YES

Notes: Standard errors are in parentheses; ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

Source: Elaboration of the authors

quotas and in the sub-sample of companies in institutional settings with high gender equality progress. Similar findings are observed in Table 18. Overall, these results reveal that the institutional setting plays a crucial role in the relationship between the presence of a critical mass of women on board and firm performance. Specifically, this relationship holds in institutional settings characterized by an individualistic culture but not in settings characterized by a collectivist culture. Moreover, the relationship holds in institutional settings without binding gender quotas but not in settings with binding gender quotas. Lastly, the relationship holds in institutional settings characterized by low gender equality progress but not in settings characterized by high gender equality progress.

5. Discussion

Improving the gender diversity of corporate boards and understanding its impact on organizational performance has been a longstanding topic of research (Green and Homroy, 2018; Havrylyshyn *et al.*, 2023). In this manuscript, we provide new theoretical insights on the boundary conditions that shape the relationship between women on board and firm performance (Ararat and Yurtoglu, 2021), considering cultural, legal and social pressures from the surrounding environment. Our analyses reveal that the presence of a critical mass of women on board is associated with improved firm performance in institutional settings characterized by an individualistic culture, while this relationship is not observed in settings characterized by a collectivist culture. Furthermore, our findings demonstrate that this causal link exists in institutional settings without binding gender quotas, but not in settings with such quotas. Additionally, we find that the relationship between women on board and firm performance holds in institutional settings characterized by low gender equality progress, contrasting with our initial expectations.

We theorized that in contexts with high gender equality, women at the top would feel more empowered to voice their opinions during board meetings and subsequently influence corporate outcomes. However, our results suggest that the presence of a critical mass of women on boards has a significant impact in contexts with lower gender equality progress. In these settings, women who have reached the corporate apex may feel a stronger motivation and responsibility to challenge the existing societal norms and bring their unique perspectives and experiences to the table. They leverage their positions of power to contribute to closing the gender gap in society. Thus, being embedded in an institutional context where gender equality progress lags, as observed in all the countries considered except for France, does not hinder women but rather serves as a catalyst for their proactive engagement in boardroom decision-making processes. These findings provide valuable insights into the complex dynamics between gender diversity, institutional contexts and firm performance (Ararat and Yurtoglu, 2021). They highlight the importance of considering cultural, legal and social factors in understanding the impact of women on board on organizational outcomes. The implications of these results and avenues for further research are discussed in detail in subsequent sections.

5.1 Theoretical implications

Our research findings contribute to the literature on women on boards by providing deeper insights into the nuanced nature of the relationship between the presence of a critical mass of women and firm performance. We go beyond the traditional understanding of critical mass theory and uncover the influence of contextual factors, including cultural, legal and social pressures, on women's ability to voice their opinions and shape board dynamics. Our findings challenge the prevailing assumption that increasing the number of women on boards uniformly enhances their influence (Seierstad *et al.*, 2017), highlighting the complex power dynamics that exist between minority and majority groups (Benton, 2021). This study advances our understanding of how the institutional context impacts the relationship between women on boards and firm performance, answering to the call made by Hazaea *et al.* (2023). By investigating this underexplored research question, we contribute to a more comprehensive and nuanced understanding of the complexities at play. Our results challenge the notion that the relationship between gender diversity and firm performance can be universally generalized across all institutional settings (Brahma *et al.*, 2021; Arvanitis *et al.*, 2022; Gharbi and Othmani, 2022). Instead, we emphasize the critical importance of considering the variations in cultural norms, legal frameworks and social contexts that shape the dynamics within each context (Jayachandran, 2021; Koburtay *et al.*, 2023). By highlighting the contextual contingencies, our research encourages scholars and practitioners to move beyond broad generalizations and consider the specific contextual factors that shape the relationship between gender diversity and firm performance. This calls for a deeper examination of how cultural values, legal frameworks and social norms interact to influence board dynamics and ultimately impact firm outcomes. Such theoretical insights are essential for developing targeted strategies and interventions that address the specific challenges and opportunities within each institutional context.

5.2 Practical implications

The research findings have significant practical implications for various stakeholders. Policymakers and regulators should consider these findings when formulating and implementing gender equality policies, including gender quotas. It is evident from the results that the mere existence of a binding gender quota does not automatically translate into improved firm performance (De Cabo *et al.*, 2019). Therefore, policymakers and regulators should also focus on broader institutional factors, cultural norms and social contexts to ensure the effectiveness of such policies. The study emphasizes the importance of creating an inclusive and supportive environment for women in leadership positions. Company leaders and board members have a crucial role to play in promoting diversity and inclusion within their organizations. By providing equal opportunities, mentorship programs and support mechanisms for women leaders, companies can harness their full potential and contribute to better firm performance. The findings also have implications for investors and shareholders who are interested in fostering gender diversity and enhancing firm performance. When assessing the impact of board diversity on company performance, investors should consider the specific institutional context and cultural factors at play. Recognizing the nuances of different contexts allows investors to make informed decisions and actively engage with companies to promote greater gender diversity on boards. Our research provides valuable insights that underscore the need for a comprehensive approach to gender diversity in leadership positions. Policymakers, regulators, company leaders and investors can leverage these findings to drive meaningful change and create more inclusive and successful organizations.

5.3 Conclusions

Our research expands upon the existing literature by examining the role of cultural norms and regulatory frameworks in shaping women's experiences and contributions within the

corporate boardroom. First, our theoretical framework and empirical findings highlight the impact of cultural context, particularly individualistic cultures, on women's empowerment and ability to express their perspectives and opinions. In these contexts, women feel more confident and empowered to voice their viewpoints, leading to a more robust contribution to company performance (Dutta *et al.*, 2022). By uncovering the positive influence of individualistic cultures on women's participation, our study emphasizes the importance of creating a supportive cultural environment that encourages diversity of thought and enables women to contribute effectively to leadership roles. Second, we theorize and provide empirical evidence that institutional settings without mandatory gender quotas foster an environment where women perceive themselves as deserving of their board positions. In these contexts, women are more likely to experience a sense of meritocracy and believe that their qualifications and capabilities have earned them their seat at the table (Hamplová *et al.*, 2022; Casaca *et al.*, 2022). This perception enhances their confidence and engagement, ultimately resulting in a more meaningful contribution to company performance as part of a critical mass of women on boards (Guedes *et al.*, 2023).

In conclusion, our research expands the understanding of the influence of the institutional context on women's behavior at the top levels of organizations. By examining the impact of cultural norms and regulatory frameworks, we provide insights into how organizations and policymakers can create inclusive environments that enable women to contribute effectively and drive firm performance. This study underscores the need for a holistic approach that considers the interplay between institutional factors and individual experiences, ultimately leading to more equitable and successful organizations.

5.4 Limitations

It is important to acknowledge the limitations of our study, which provide opportunities for future investigation. Generalizability may be constrained due to the sample's limited coverage of companies worldwide. Future studies should aim to collect data from a broader range of countries and regions to enhance the external validity of the findings. Furthermore, our empirical approach does not directly examine the specific behaviors of women directors, a common challenge in board research due to limited access to primary board data. Qualitative research methods could provide deeper insights into the micro-behavioral mechanisms and dynamics within the boardroom (Wiersema and Mors, 2023; Trzebiatowski *et al.*, 2023), strengthening the overall quality and reliability of the findings presented in this paper.

References

- Abadi, M., Dirani, K.M. and Rezaei, F.D. (2022), "Women in leadership: a systematic literature review of Middle Eastern women managers' careers from NHRD and institutional theory perspectives", *Human Resource Development International*, Vol. 25 No. 1, pp. 19-39.
- Adams, R.B. (2016), "Women on boards: the superheroes of tomorrow?", *The Leadership Quarterly*, Vol. 27 No. 3, pp. 371-386.
- Adams, R.B. and Ferreira, D. (2009), "Women in the boardroom and their impact on governance and performance", *Journal of Financial Economics*, Vol. 94 No. 2, pp. 291-309.
- Adams, R.B. and Funk, P. (2012), "Beyond the glass ceiling: does gender matter?", *Management Science*, Vol. 58 No. 2, pp. 219-235.
- Ararat, M. and Yurtoglu, B.B. (2021), "Female directors, board committees, and firm performance: time-series evidence from Turkey", *Emerging Markets Review*, Vol. 48, p. 100768.
- Arena, C., Cirillo, A., Mussolino, D., Pulcinelli, I., Saggese, S. and Sarto, F. (2015), "Women on board: evidence from a masculine industry", *Corporate Governance*, Vol. 15 No. 3, pp. 339-356.

- Arvanitis, S.E., Varouchas, E.G. and Agiomirgianakis, G.M. (2022), "Does board gender diversity really improve firm performance? Evidence from Greek listed firms", *Journal of Risk and Financial Management*, Vol. 15 No. 7, p. 306.
- Bear, S., Rahman, N. and Post, C. (2010), "The impact of board diversity and gender composition on corporate social responsibility and firm reputation", *Journal of Business Ethics*, Vol. 97 No. 2, pp. 207-222.
- Benton, R.A. (2021), "Women in the inner circle: gender and director networks after the fracturing of the corporate elite", *Organization Science*, Vol. 32 No. 6, pp. 1492-1522.
- Brahma, S., Nwafor, C. and Boateng, A. (2021), "Board gender diversity and firm performance: the UK evidence", *International Journal of Finance & Economics*, Vol. 26 No. 4, pp. 5704-5719.
- Byron, K. and Post, C. (2016), "Women on boards of directors and corporate social performance: a meta-analysis", *Corporate Governance: An International Review*, Vol. 24 No. 4, pp. 428-442.
- Campbell, K. and Minguéz-Vera, A. (2008), "Gender diversity in the boardroom and firm financial performance", *Journal of Business Ethics*, Vol. 83 No. 3, pp. 435-451.
- Campopiano, G., Gabaldón, P. and Gimenez-Jimenez, D. (2022), "Women directors and corporate social performance: an integrative review of the literature and a future research agenda", *Journal of Business Ethics*, Vol. 182 No. 3, pp. 1-30.
- Casaca, S.F., Guedes, M.J., Marques, S.R. and Paço, N. (2022), "Shedding light on the gender quota law debate: board members' profiles before and after legally binding quotas in Portugal", *Gender in Management: An International Journal*, Vol. 37 No. 8, pp. 1026-1044.
- Chapple, L. and Humphrey, J.E. (2014), "Does board gender diversity have a financial impact? Evidence using stock portfolio performance", *Journal of Business Ethics*, Vol. 122 No. 4, pp. 709-723.
- Cortis, N., Foley, M. and Williamson, S. (2022), "Change agents or defending the status quo? How senior leaders frame workplace gender equality", *Gender, Work & Organization*, Vol. 29 No. 1, pp. 205-221.
- Darmadi, S. (2013), "Do women in top management affect firm performance? Evidence from Indonesia", *Corporate Governance: The International Journal of Business in Society*, Vol. 13 No. 3, pp. 288-304.
- Davies-Netzley, S.A. (1998), "Women above the glass ceiling: perceptions on corporate mobility and strategies for success", *Gender & Society*, Vol. 12 No. 3, pp. 339-355.
- De Cabo, R.M., Terjesen, S., Escot, L. and Gimeno, R. (2019), "Do 'soft law' board gender quotas work? Evidence from a natural experiment", *European Management Journal*, Vol. 37 No. 5, pp. 611-624.
- De Masi, S., Słomka-Gołębiowska, A. and Paci, A. (2021), "Women on boards and monitoring tasks: an empirical application of Kanter's theory", *Management Decision*, Vol. 59 No. 13, pp. 56-72.
- Dutta, N., Giddings, L. and Sobel, R.S. (2022), "Does trust always help gender role attitudes? The role of individualism and collectivism", *Social Indicators Research*, Vol. 159 No. 1, pp. 1-30.
- Elstad, B. and Ladegard, G. (2012), "Women on corporate boards: key influencers or tokens?", *Journal of Management & Governance*, Vol. 16 No. 4, pp. 595-615.
- Etzkowitz, H., Kemelgor, C., Neuschatz, M., Uzzi, B. and Alonzo, J. (1994), "The paradox of critical mass for women in science", *Science*, Vol. 266 No. 5182, pp. 51-54.
- Gharbi, S. and Othmani, H. (2022), "Threshold effects of board gender diversity on firm performance: panel smooth transition regression model", *Corporate Governance: The International Journal of Business in Society*, Vol. 23 No. 1.
- Glass, C. and Cook, A. (2020), "Performative contortions: how white women and people of colour navigate elite leadership roles", *Gender, Work & Organization*, Vol. 27 No. 6, pp. 1232-1252.
- Goncalo, J.A. and Staw, B.M. (2006), "Individualism-collectivism and group creativity", *Organizational Behavior and Human Decision Processes*, Vol. 100 No. 1, pp. 96-109.
- Gong, M., Zhang, Z., Jia, M. and Walls, J.L. (2021), "Does having a critical mass of women on the board result in more corporate environmental actions? Evidence from China", *Group & Organization Management*, Vol. 46 No. 6, pp. 1106-1144.
- Green, C.P. and Homroy, S. (2018), "Female directors, board committees and firm performance", *European Economic Review*, Vol. 102, pp. 19-38.

- Guedes, M.J., Patel, P.C. and Casaca, S.F. (2023), "On the same page? Differences between male and female board members on the benefits of a gender-balanced representation", *Corporate Governance: The International Journal of Business in Society*, Vol. 23 No. 3, pp. 514-533.
- Hamplová, E., Janeček, V. and Lefley, F. (2022), "Board gender diversity and women in leadership positions—are quotas the solution?", *Corporate Communications: An International Journal*, Vol. 27 No. 4, pp. 742-759.
- Havrylyshyn, A., Schepker, D.J. and Nyberg, A.J. (2023), "In the club? How categorization and contact impact the board gender diversity-firm performance relationship", *Journal of Business Ethics*, Vol. 184 No. 2, pp. 353-374.
- Hazaea, S.A., Al-Matari, E.M., Farhan, N.H. and Zhu, J. (2023), "The impact of board gender diversity on financial performance: a systematic review and agenda for future research", *Corporate Governance: The International Journal of Business in Society*, Vol. 23 No. 7.
- Hillman, A.J. (2015), "Board diversity: beginning to unpeel the onion", *Corporate Governance: An International Review*, Vol. 23 No. 2, pp. 104-107.
- Hofstede, G. (2011), "Dimensionalizing cultures: the Hofstede model in context", *Online Readings in Psychology and Culture*, Vol. 2 No. 1, p. 8.
- Hoobler, J.M., Masterson, C.R., Nkomo, S.M. and Michel, E.J. (2018), "The business case for women leaders: meta-analysis, research critique, and path forward", *Journal of Management*, Vol. 44 No. 6, pp. 2473-2499.
- Hughes, M.M., Paxton, P. and Krook, M.L. (2017), "Gender quotas for legislatures and corporate boards", *Annual Review of Sociology*, Vol. 43 No. 1, pp. 331-352.
- Iannotta, M., Gatti, M. and Huse, M. (2016), "Institutional complementarities and gender diversity on boards: a configurational approach", *Corporate Governance: An International Review*, Vol. 24 No. 4, pp. 406-427.
- Isidro, H. and Sobral, M. (2015), "The effects of women on corporate boards on firm value, financial performance, and ethical and social compliance", *Journal of Business Ethics*, Vol. 132 No. 1, pp. 1-19.
- Jayachandran, S. (2021), "Social norms as a barrier to women's employment in developing countries", *IMF Economic Review*, Vol. 69 No. 3, pp. 576-595.
- Jeong, S.H. and Harrison, D.A. (2017), "Glass breaking, strategy making, and value creating: meta-analytic outcomes of women as CEOs and TMT members", *Academy of Management Journal*, Vol. 60 No. 4, pp. 1219-1252.
- Joecks, J., Pull, K. and Vetter, K. (2013), "Gender diversity in the boardroom and firm performance: what exactly constitutes a critical mass?", *Journal of Business Ethics*, Vol. 118 No. 1, pp. 61-72.
- Khanna, P., Jones, C.D. and Boivie, S. (2014), "Director human capital, information processing demands, and board effectiveness", *Journal of Management*, Vol. 40 No. 2, pp. 557-585.
- Koburtay, T., Abuhusseini, T. and Sidani, Y.M. (2023), "Women leadership, culture, and Islam: female voices from Jordan", *Journal of Business Ethics*, Vol. 183 No. 2, pp. 347-363.
- Konrad, A.M., Kramer, V. and Erkut, S. (2008), "The impact of three or more women on corporate boards", *Organizational Dynamics*, Vol. 37 No. 2, pp. 145-164.
- Kráft, C. (2022), "Equal pay behind the 'glass door'? The gender gap in upper management in a male-dominated industry", *Gender, Work & Organization*, Vol. 29 No. 6, pp. 1910-1926.
- Krook, M.L. and Norris, P. (2014), "Beyond quotas: strategies to promote gender equality in elected office", *Political Studies*, Vol. 62 No. 1, pp. 2-20.
- Labelle, R., Francoeur, C. and Lakhali, F. (2015), "To regulate or not to regulate? Early evidence on the means used around the world to promote gender diversity in the boardroom", *Gender, Work & Organization*, Vol. 22 No. 4, pp. 339-363.
- Lefley, F. and Janeček, V. (2023), "Board gender diversity, quotas and critical mass theory", *Corporate Communications: An International Journal*.
- Leonard, B. and Smith, S.M. (2021), "Individualistic culture increases economic mobility in the United States", *Proceedings of the National Academy of Sciences*, Vol. 118 No. 37, p. e21107273118.
- Leyva-Townsend, P., Rodriguez, W., Idrovo, S. and Pulga, F. (2021), "Female board participation and firm's financial performance: a panel study from a Latin American economy", *Corporate Governance: The International Journal of Business in Society*, Vol. 21 No. 5, pp. 920-938.

- Lückerath-Rovers, M. (2013), "Women on boards and firm performance", *Journal of Management & Governance*, Vol. 17 No. 2, pp. 491-509.
- McDonald, P. (2012), "Workplace sexual harassment 30 years on: a review of the literature", *International Journal of Management Reviews*, Vol. 14 No. 1, pp. 1-17.
- Marcus, J. and Le, H. (2013), "Interactive effects of levels of individualism–collectivism on cooperation: a meta-analysis", *Journal of Organizational Behavior*, Vol. 34 No. 6, pp. 813-834.
- Martinez-Jimenez, R., Hernández-Ortiz, M.J. and Cabrera Fernández, A.I. (2020), "Gender diversity influence on board effectiveness and business performance", *Corporate Governance: The International Journal of Business in Society*, Vol. 20 No. 2, pp. 307-323.
- Menicucci, E. and Paolucci, G. (2022), "Gender diversity and bank risk-taking: an empirical investigation in Italy", *Corporate Governance: The International Journal of Business in Society*, Vol. 22 No. 2, pp. 317-339.
- Mensi-Klarbach, H. and Seierstad, C. (2020), "Gender quotas on corporate boards: similarities and differences in quota scenarios", *European Management Review*, Vol. 17 No. 3, pp. 615-631.
- Mínguez-Vera, A. and Martín, A. (2011), "Gender and management on Spanish SMEs: an empirical analysis", *The International Journal of Human Resource Management*, Vol. 22 No. 14, pp. 2852-2873.
- Morgan, S.L. and Winship, C. (2015), *Counterfactuals and Causal Inference*, Cambridge University Press.
- Nguyen, T.H.H., Ntim, C.G. and Malagila, J.K. (2020), "Women on corporate boards and corporate financial and non-financial performance: a systematic literature review and future research agenda", *International Review of Financial Analysis*, Vol. 71, p. 101554.
- Noguera, M. (2020), "Women directors' effect on firm value and performance: the case of REITs", *Corporate Governance: The International Journal of Business in Society*, Vol. 20 No. 7, pp. 1265-1279.
- Perrault, E. (2015), "Why does board gender diversity matter and how do we get there? The role of shareholder activism in deinstitutionalizing old boys' networks", *Journal of Business Ethics*, Vol. 128 No. 1, pp. 149-165.
- Rose, C. (2007), "Does female board representation influence firm performance? The Danish evidence", *Corporate Governance: An International Review*, Vol. 15 No. 2, pp. 404-413.
- Schwartz, S.H. (1990), "Individualism-collectivism: critique and proposed refinements", *Journal of Cross-Cultural Psychology*, Vol. 21 No. 2, pp. 139-157.
- Seierstad, C., Warner-Søderholm, G., Torchia, M. and Huse, M. (2017), "Increasing the number of women on boards: the role of actors and processes", *Journal of Business Ethics*, Vol. 141 No. 2, pp. 289-315.
- Sidhu, J.S., Feng, Y., Volberda, H.W. and Van Den Bosch, F.A. (2021), "In the shadow of social stereotypes: gender diversity on corporate boards, board chair's gender and strategic change", *Organization Studies*, Vol. 42 No. 11, pp. 1677-1698.
- Sosik, J.J. and Jung, D.I. (2002), "Work-group characteristics and performance in collectivistic and individualistic cultures", *The Journal of Social Psychology*, Vol. 142 No. 1, pp. 5-23.
- Subašić, E., Hardacre, S., Elton, B., Branscombe, N.R., Ryan, M.K. and Reynolds, K.J. (2018), "We for she': mobilising men and women to act in solidarity for gender equality", *Group Processes & Intergroup Relations*, Vol. 21 No. 5, pp. 707-724.
- Terjesen, S., Aguilera, R.V. and Lorenz, R. (2015), "Legislating a woman's seat on the board: institutional factors driving gender quotas for boards of directors", *Journal of Business Ethics*, Vol. 128 No. 2, pp. 233-251.
- Terjesen, S., Couto, E.B. and Francisco, P.M. (2016), "Does the presence of independent and female directors impact firm performance? A multi-country study of board diversity", *Journal of Management & Governance*, Vol. 20 No. 3, pp. 447-483.
- Terjesen, S. and Sealy, R. (2016), "Board gender quotas: exploring ethical tensions from a multi-theoretical perspective", *Business Ethics Quarterly*, Vol. 26 No. 1, pp. 23-65.
- Torchia, M., Calabrò, A. and Huse, M. (2011), "Women directors on corporate boards: from tokenism to critical mass", *Journal of Business Ethics*, Vol. 102 No. 2, pp. 299-317.

Trzebiatowski, T., McCluney, C. and Hernandez, M. (2023), "Managing the double bind: women directors' participation tactics in the gendered boardroom", *Organization Science*, Vol. 34 No. 2, pp. 801-827.

Wiersema, M.F. and Mors, M.L. (2023), "Women directors and board dynamics: qualitative insights from the boardroom", *Journal of Management*, p. 1492063231173421.

Zajiji, Z., Wilson-Prangley, A. and Ndletyana, D. (2021), "Board level (in) visibility and critical mass in South African companies", *Gender in Management: An International Journal*, Vol. 36 No. 1, pp. 149-168.

Zhang, L. (2020), "An institutional approach to gender diversity and firm performance", *Organization Science*, Vol. 31 No. 2, pp. 439-457.

Further reading

Kanter, R.M. (1977), "Some effects of proportions on group life", *The Gender Gap in Psychotherapy*, Springer, Boston, MA, pp. 53-78.

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